AMENDMENTS TO THE CLAIMS

Claim 1 (currently amended): A process for preparing methylamines ~~by~~ comprising gas-phase reaction of methanol and ammonia as starting materials at a pressure in the range from 15 to 30 bar in the presence of a heterogeneous catalyst, which further comprises vaporizing the starting materials in one or more heat exchangers ~~(1, 2, 3)~~, superheating them to form a feed gas stream and subsequently feeding this into a reactor ~~(4)~~, with the starting materials either being mixed in the feed stream to one of the heat exchangers ~~(1, 2, 3)~~ or at any other position on the heat exchanger ~~(1, 2, 3)~~, and taking off a product gas stream comprising monomethylamine, dimethylamine and trimethylamine and also reaction by-products from the reactor ~~(4)~~, wherein the reactor inlet temperature of the starting materials is controlled to a temperature in the range from 360°C to 370°C by passing part or all of the feed gas stream or product gas stream through an adjustable valve ~~(5)~~ in order to vary the pressure.

Claim 2 (currently amended): A process as claimed in claim 1, wherein the valve ~~(5)~~ can be adjusted steplessly.

Claim 3 (currently amended): A process as claimed in claim 1 ~~or 2~~, wherein the valve is installed upstream or downstream of the reactor.

Claim 4 (currently amended): A process as claimed in claim 1 ~~any of claims 1 to 3~~, wherein the product gas stream is used for vaporizing and superheating the starting materials, resulting in partial condensation of the product gas stream.

Claim 5 (currently amended): A process as claimed in claim 1 ~~any of claims 1 to 3~~, wherein a substream of the product gas stream is used for vaporizing and superheating the starting materials.

Claim 6 (currently amended): A process as claimed in claim 1 ~~any of claims 1 to 5~~, wherein the reaction by-products formed in the reaction are separated off from the product gas stream and fed back into the reactor ~~(4)~~.

Claim 7 (currently amended): A process as claimed in claim 6, wherein the ammonia and the reaction by-products fed back into the reactor ~~(4)~~ are preheated before the methanol is added.

Claim 8 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 7~~, wherein steam is added to the product gas stream to preheat and superheat the starting materials.

Claim 9 (currently amended): A process as claimed in ~~one or more of claims 1 to 8~~, wherein the reactor ~~(4)~~ is operated adiabatically.

Claim 10 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 8~~, wherein heat of reaction is removed by cooling the reactor ~~(4)~~.

Claim 11 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 10~~, wherein, when a plurality of heat exchangers ~~(1, 2, 3)~~ is used for vaporization and superheating of the starting materials, a droplet precipitator ~~(6, 7)~~ for separating condensate from the product gas stream is installed downstream of each heat exchanger ~~(1, 2, 3)~~.

Claim 12 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 11~~, wherein the pressure at the inlet of the valve is from 0 to 5 bar higher than at the outlet of the valve.

Claim 13 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 12~~, wherein the starting materials are heated up electrically to start the reaction.

Claim 14 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 13~~, wherein vaporization and susperheating of the starting materials is carried out in countercurrent.

Claim 15 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 13~~, wherein vaporization and superheating of the starting materials is carried out in cocurrent.

Claim 16 (currently amended): A process as claimed in claim 1 ~~one or more of claims 1 to 13~~, wherein, when a plurality of heat exchangers ~~(1, 2, 3)~~ is used for vaporization and superheating of the starting materials, at least one heat exchanger ~~(1, 2, 3)~~ operates in cocurrent and at least one heat exchanger ~~(1, 2, 3)~~ operates in countercurrent.

Claim 17 (new): A process as claimed in claim 2 wherein the valve is installed upstream or downstream of the reactor.

Claim 18 (new): A process as claimed in claim 2 wherein the product gas stream is used for vaporizing and superheating the starting materials, resulting in partial condensation of the product gas stream.

Claim 19 (new): A process as claimed in claim 3 wherein the product gas stream is used for vaporizing and superheating the starting materials, resulting in partial condensation of the product gas stream.

Claim 20 (new): A process as claimed in claim 2 wherein a substream of the product gas stream is used for vaporizing and superheating the starting materials.